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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/813,434 | 03/31/2004 | Hiroshi Torihara | 829-622 | 3803 |
| 23117 | 7590 | 02/17/2006 | EXAMINER | |
| NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203 | | | | SAWHNEY, HARGOBIND S |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2875 | |

DATE MAILED: 02/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

EX

| | | |
|------------------------------|----------------------|-------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/813,434 | TORIHARA, HIROSHI |
| | Examiner | Art Unit |
| | Hargobind S. Sawhney | 2875 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 06 December 2005.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-24 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-24 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____.
 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____.

DETAILED ACTION

1. The amendment filed on December 06, 2005 has been entered. Accordingly, claim 1 has been amended, and claim 24 has been added. In addition, the formal drawings, Figures 1-7, included in the submitted replacement sheets have been entered.

Claim Objections

2. Claim 2 is objected to because of the following informalities:

Claim 2, lines 1 and 2, "the projection includes a thin plate portion which is shaped like thin plate" does not recite any definite limitation. The above-indicated limitation may be rephrased as -- the projection includes a thin plate portion --.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1- 7, 16-22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Torihara et al. (Japanese Application Pub. 2000-235805 A) in view of Fukuoka (Japanese Patent No. JP 8320486), hereinafter referred as Fukuoka.

Regarding claim 1, Torihara et al. (Japanese Application Pub. 2000-235805 A), hereinafter referred as Torihara, discloses an illumination device 20 (Figure 2) for illuminating a liquid crystal display (LCD) panel, the illuminating device 20 comprising:

- a light source L; an optical conductor T including a light-incident surface 4 receiving light emitted by the light source L; a light output surface – the upper surface opposite to the incident surface 4- allowing the light output; and a projection 6 projecting from the incident surface 4 of the optical conductor T (Figure 2, English translated abstract);
- a light-scattering section 5 including an engaging portion engageable with the projection 6 of the optical conductor T (Figure 2, English translated abstract).
- the optical conductor having a projection included in the effective display area of the LCD panel (Figure 2, English translated abstract).

However, Torihara does not specifically disclose an optical conductor having its projection located outside the periphery of the effective display area of the light crystal display (LCD) panel.

On the other hand, Fukuoka discloses an illumination system 10 for illuminating an LCD 3 (Figure 1, English translated abstract) including an optical conductor 4a having its projection b located outside the periphery of the effective display area of the LCD panel 3 (Figure 1, English translated abstract) .

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the illumination device of Torihara by providing and positioning the

optical conductor with a projection as taught by Fukuoka for the benefits of increase in uniform brightness due to comparatively reduced optical leakage.

Regarding claims 2-7, 16-22 and 24, Torihara in view of Fukuoka discloses the illumination device further including:

- the projection 6 including a thin plate portion, and the projection 6 positioned closer to the light output surface than bottom surface 19 facing the light output surface of the optical conductor T (Torihara, Figure 2);
- the light scattering section 5 including a plate-like section including a first portion and a second portion thinner than the first portion (Torihara, Figure 2); the engaging portion of the scattering portion 5 includes a step formed by the first and the second portion (Torihara, Figure 2);
- the light source L being a linear light source (Torihara, Figure 2, English translated abstract);
- a surface of the first portion of the light scattering section 5, a surface of the projection of the optical conductor T, and light output surface are substantially co-planer (Torihara, Figure 2);
- the light scattering section 5 having the end of its second portion positioned inside the light incident surface and in contact with the optical conductor T (Torihara, Figure 2);
- an optical sheet 11,12 – combination of high and low diffusion sheets 11 and 12 - positioned on the light output surface of the optical conductor T (Figure 2, English translated abstract);

- a transmissive LCD 15 transmitting light for performing displays (Figure 2, English translated abstract);
- the light-scattering section 5 including a first portion, and a second portion thinner than the first portion, and the engaging portion having a step formed by the first and second portions (Figures 2 and 3e);
- the light-scattering section 5 including the first portion surface coplanar with the projection and output surfaces of the optical conductor T (Figures 2 and 3e);
- the end of the second portion of the light-scattering section positioned inside the light-incident surface of the optical conductor T (Figures 2 and 3e);
- the optical sheet 11,12 – combination of high and low diffusion sheets 11 and 12 - optically combined with a prism sheet 13 combining selective reflective sections and a high turbidity diffusion sheet 12 (Figure 2, English translated abstract);
- a fixation section 16 positioned below the light incident surface 4 of the optical conductor T; a reflection section 14 reflecting light output from the bottom surface of the light conductor T; the reflection section 14 positioned between the fixation section 16 and the optical conductor T (Figure 2, English translated abstract);
- the surface of the reflection section 14 and the bottom surface of the optical conductor being in optical and physical contact with each other

below the light-incident surface of the optical conductor T (Figure 2, English translated abstract); and

- the step-portion, of the light-scattering section 5, having its vertical wall engaging with an end of the projection of the light-conductor, which projects from the light-incident surface (Figures 2 and 3e).

5. Claims 8 -15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Torihara et al. (Japanese Application Pub. 2000-235805 A) in view of Fukuoka (Japanese Patent No. JP 8320486), as applied to Claim 1 above, and further in view of Watanabe (Japanese Patent No.: 6474864).

Regarding Claim 8, Torihara in view of Fukuoka discloses an illumination device 20 (Figure 2) comprising linear light source of a circular cross section providing equal areas of projection irrespective of its angular orientation. However, neither combined nor individual teaching of Torihara and Fukuoka specifically teaches the light source having its area projecting on the incident surface of the optical conductor being larger than that facing the scattering section.

On the other hand, Watanabe (Japanese Patent No.: 6474864), hereinafter referred as Watanabe, discloses a solid-state illumination device (Figure 1) including a fluorescent light tube 101 with an elliptical cross section, and thus having its area projecting on the incident surface of the optical conductor being larger than that orthogonal to the projection area (Figure 1, English translated abstract).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the modify the illumination device of Torihara in view of Fukuoka by

providing the fluorescent light tube of an elliptical cross section ad taught by Watanabe for the benefits of reducing a distance between the light source and the incident surface, and benefits of brighter light from the fluorescent tube.

Regarding claims 9-12, Torihara in view of Fukuoka and Watanabe discloses the illumination device (Torihara, Figure 2) further including:

- a fluorescent tube 101 of an elliptical cross section having a longer axis substantially perpendicular to direction vertical to the light incident surface of the optical conductor (Watanabe, Figure 1, English translated abstract); and
- the fluorescent tube L of Torihara modified with Watanabe having a bending portion (Torihara, Figure 5); and
- the light source L , Torihara modified with Watanabe, operationally required to have a first electrode provided with a first voltage and a second electrode with a second voltage less than the first voltage.

Regarding Claim 13, Torihara in view of Fukuoka and Watanabe discloses the illumination device including a fluorescent tube with an elliptical cross section, and the fluorescent tube further including electrodes provided with different voltage levels.

However, neither combined nor individual teaching of Torihara, Fukuoka and Watanabe specifically teaches an elliptical fluorescent tube further having an electrode with non-elliptical cross section.

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the illumination device with a fluorescent light tube of an elliptical

cross section by providing at least one electrode with non-elliptical cross section, since it has been held that a change in shape or configuration, without any criticality, is generally within the level of ordinary skill in the art.

Regarding Claim 14, Torihara in view of Fukuoka and Watanabe discloses the illumination device including a fluorescent tube with an elliptical cross section. However, neither combined nor individual teaching of Torihara, Fukuoka and Watanabe specifically teaches the specific dimensional ratio of the lengths of the longer and shorter axes the elliptical cross-section of the fluorescent tube.

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the illumination device, fluorescent light tube of an elliptical cross section by providing at least one electrode with non-elliptical cross section, since it has been held that a change in shape or configuration, without any criticality is generally within the level of ordinary skill in the art.

Regarding Claim 15, Torihara in view of Fukuoka and Watanabe discloses the illumination device including a fluorescent tube with an elliptical cross section, and the fluorescent tube further including electrodes provided with different voltage levels. However, neither combined nor individual teaching of Torihara, Fukuoka and Watanabe specifically teaches voltage level increments at the start and during the operation of the fluorescent tube. Additionally, neither combined nor individual teaching of Torihara, Fukuoka and Watanabe specifically teaches the allowable range of luminance level at the outer surface of the fluorescent tube.

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the illumination device with fluorescent light tube sized for the above-indicated operational parameters, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

6. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Torihara et al. (Japanese Application Pub. 2000-235805 A) in view of Fukuoka (Japanese Patent No. JP 8320486), as applied to Claim 1 above, and further in view of Umemoto et al. (US Patent Application Pub. No.: US 2003/0043315 A1).

Torihara in view of Fukuoka discloses an illumination device 20 (Figure 2) comprising a transmission-type LCD. However, neither combined nor individual teaching of Torihara and Fukuoka specifically teaches the transmission-type LCD also performing display by reflecting external light.

On the other hand, Umemoto et al. (US Patent Application Pub. No.: US 2003/0043315 A1), hereinafter referred as Umemoto, discloses an LCD device 1 (Figure 1) comprising a semi-transmission reflection layer 11 transmitting a part of light while reflecting the other part of the light (Figure 1, Para. 0011, 0014, 0057); the semi-transmission reflecting layer 11 also performing as an electrode of the LCD 1 (Figure 1, Para. 0034; and the use of the semi-transmission reflecting layer 11 imparting abilities to the LCD to perform display function by allowing transmission of light from the back-light source, and reflection of external light (Figure 1, Para. 11).

It would be have been obvious to one of ordinary skill in the art at the time of the invention to modify the illumination device of Torihara in view of Fukuoka by providing

the LED panel with the semi-transmission reflecting layer as taught by Umemoto an LCD device for the benefits of making the device capable of functioning in an external mode, and in an illumination mode.

Response to Arguments

7. Applicant's arguments filed on December 6,2005 with respect to the 35 U.S.C. 102(e) rejections of claims 1-7 and 16-22; and 35 U.S.C. 103(a) rejections of claims 8-15 and 23 have been fully considered but are moot in view of the new ground(s) of rejections. Applicant's amendment necessitated the new ground of rejections presented in this office action.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Fukuoka (Japanese Patent No. JP 8320486) and Fukuoka (Japanese Patent No. JP 8122778)

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hargobind S Sawhney whose telephone number is 571 272 2380. The examiner can normally be reached on 6:15 - 2:45.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on 571 272 2378. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HSS
2/6/2006


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PRIMARY EXAMINER